UniOP eTOP Series 500
Operating Instructions

Basic User's Manual for eTOP Series 500
Touchscreen Products

Exor International S.p.A.
MANUGENETOP5xx UniOP
Ver. 1.04

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Introduction

The operational guidelines described below is information which relates to the device, installation, transportation, storage, assembly, use and maintenance.

This Operating Instruction describes the main features of the UniOP operator panels. The Manual refers to the following models:

eTOP504	Operator interface with TFT color 4.3” display touchscreen
eTOP506	Operator interface with TFT color 5.7” display touchscreen
eTOP507	Operator interface with TFT color 7” widescreen display touchscreen
eTOP510	Operator interface with TFT color 10.4” display touchscreen
eTOP512	Operator interface with TFT color 12.1” display touchscreen
eTOP513	Operator interface with TFT color 13.3” widescreen display touchscreen
eTOP515	Operator interface with TFT color 15” display touchscreen

Safety Guide

The manual contains safety standards that must be respected for the personal safety and to avoid damage. Indications of attention are divided into three levels of severity:

DANGER: indicates a failure to observe safety rules and such failure may cause death or serious injuries.

ATTENTION: indicates a failure to observe safety rules and that deficiency may cause damage.

CAUTION: indicates a failure to observe safety rules and that deficiency may cause defects to the equipment or inconsistencies.

1 Product Overview

The UniOP eTOP Series 500 HMI products combine state-of-the-art features and top performance with an oustanding design. They are the ideal choice for all demanding HMI applications including factory and building automation.

The eTOP Series 500 HMI panels have been designed to run the JMobile software.

- JMobile runtime included. Full compatibility with JMobile Studio.
- Full vector graphic support. Native support of SVG graphic objects. Trasparency and alpha blending.
- Full object dynamics: control visibility and transparency, move, resize, rotate any object on screen. Change properties of basic and complex objects.
- TrueType fonts.
- Multilanguage applications. Easily create and manage your applications in multiple languages to meet global requirements. Far East languages are supported. Tools available in JMobile Studio support easy third-party translations and help reducing development and maintenance costs of the application.
- Data display in numerical, text, bargraph, analog gauges and graphic image formats.
- Rich set of state-of-the-art HMI features: data acquisition, alarm handling, scheduler and timed actions (daily and weekly schedulers, exception dates), recipes, users and passwords, RSS feeds, rotating menus.
- Includes support for a wide range of communication drivers for Factory systems.
- Multiple drivers communication capability.
- Remote monitoring and control. Client-Server functionality.
- Off-line simulation with JMobile Studio.
- Powerful scripting language for automating HMI applications. Script debugging improves efficiency in application development.
- Rich gallery of vector symbols and objects.
- Project templates.
- Optional plug-in modules for fieldbus systems, I/O and controllers.

2 Standards and Approvals

The products have been designed for use in an industrial environment in compliance with the 2004/108/EC EMC Directive.
The products have been designed in compliance with:

EN 61000-6-4	EN 55011 Class A
EN 61000-6-2	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6

The installation of these devices into the residential, commercial and light-industrial environments is allowed only in the case that special in measures are taken in order to ensure conformity to EN 61000-6-3.

The products are in compliance with the Restrictions on Certain Hazardous Substances (RoHS) Directive 2002/95/EC

In compliance with the above regulations the products are CE marked.

Product Identification

The product may be identified through a plate attached to the rear cover. You will have to know the type of unit you are using for correct usage of the information contained in the guide.
An example of this plate is shown in the figure below:

eTOP504	product model name
ETOP504U101	product part number
05/11	month/year of production
09994847559	serial number
040100A01000000	version id of the product

3 Technical Specifications

Touch screen technology	Resistive
Back-up battery	3V 50mAh Lithium, rechargeable, not user-replaceable, model VL2330.
Fuse	Automatic
Serial Port	RS-232, RS-485, RS-422 software configurable
User memory	Flash 128Mb
Recipe memory	Flash
Hardware clock	Clock/Calendar with back-up battery
Accuracy RTC (at 25°C)	<100ppm

Environmental conditions

Operating temperature (surrounding air temperature)	0 ÷ +50°C	EN60068-2-14
Storage temperature	-20 ÷ +70°C	EN60068-2-14
Operating and storage humidity	5 ÷ 85 % RH not-condensing	EN60068-2-30
Vibrations	5 ÷ 9 Hz, 7 mm $_{p-p}$ 9 ÷ 150 Hz, 1 g	EN 60068-2-6
Shock	± 50 g, 11 ms, 3 pulses per axis	EN60068-2-27
Protection class	IP66 front panel *	EN 60529

* The front face of the UniOP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the “Environmental conditions”. Even though the level of resistance UniOP unit is equivalent to these standards, oils that should have no effect on the UniOP can possibly harm the unit. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oil are allowed to adhere to the unit for long periods of time. If the front face protection sheet on the UniOP becomes peeled off, these conditions can lead to the ingress of oil into the UniOP and separate protection measures are suggested.
If the installation gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed.

Electromagnetic Compatibility (EMC)

Radiated disturbance test	Class A	EN 55011
Electrostatic discharge immunity test	8 kV (air electrostatic discharge) 4 kV (contact electrostatic discharge)	EN 61000-4-2
Radiated, radio-frequency, electromagnetic field immunity test	80 MHz ÷ 1 GHz, 10V/m 1,4 GHz ÷ 2 GHz, 3 V/m 2 GHz ÷ 2.7 GHz, 1 V/m	EN 61000-4-3
Burst immunity test	± 2 KV DC power port ± 1 KV signal line	EN 61000-4-4
Surge immunity test	± 0,5 KV DC power port (line to earth) ± 0,5 KV DC power port (line to line) ± 1 KV signal line (line to earth)	EN 61000-4-5
Immunity to conducted disturbances inducted by radiofrequency field	0.15 ÷ 80 MHz, 10V	EN 61000-4-6
Voltage dips, short interruptions and voltage variations immunity test	Port: AC mains; Level: 100% duration: 1 cycle and 250 cycles (50Hz); 40% duration: 10 cycles (50Hz); 70% duration: 25 cycles (50Hz); Phase: 0°-180°	
Test executed on the 230Vac side of the Sitek Power Supply		EN 61000-4-11

Durability information

Backlight service life (LED type)	40000 Hrs. or more (Time of continuos operation until the brightness of the backlight reaches 50% of the rated value when the sorrounding air temperature is 25°C) - see Note 1
Front foil (without directly exposure to sunlight or UV ray)	10 years if the surrounding air temperature is 25°C
UV Resistance	Indoor applications: After 300 hours cycled humidity in QUV accelerated weathering, some yellowing and brittleness may be present. - see Note 2.
Touch screen reliability	> 1 milion operations

Note 1: Extended use in environments where the surrounding air temperature is 40°C or higher may degrade backlight quality/reliability/durability.
Note 2: Solvent resistance:
Contact for 1/2 hour at 21°C, No visible effect: Acetone, Butyl Cellosolve, Cyclohexanone, Ethyl Acetate, Hexane, Isopropyl Alcohol, MEK, Methylene Chloride, Toluene, Xylene
Contact for 24 hours at 49°C, No visible effect: Coffee, Ketchup, Lemon Juice, Mustard (slight yellow stain), Tea, Tomato juice.

4 Technical Data

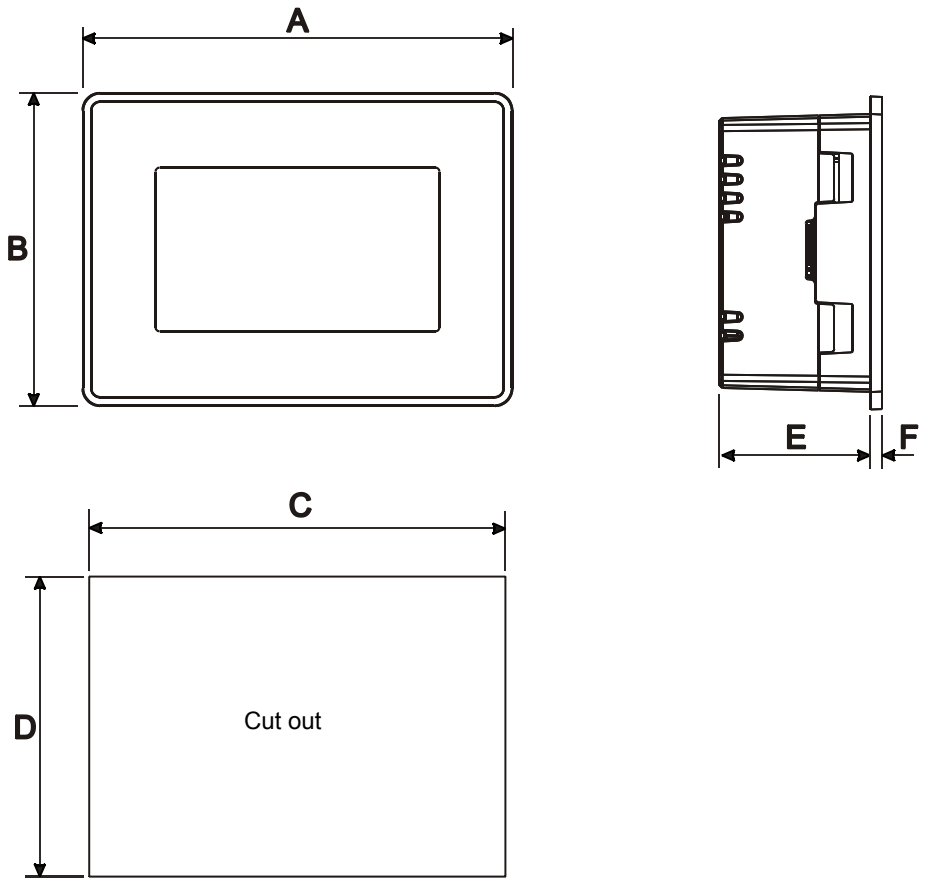
Model	*eTOP504*	*eTOP506*
Display / Backlight	TFT Color / LED	TFT Color / LED
Colors	64K	64K
Resolution	480X272	320x240
Diagonal (inches)	4.3”	5.7”
Dimming	yes	yes
User memory flash	128MB	128MB
SD card slot	yes	yes
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
Serial Port	RS-232,RS-485 RS-422 DB9 female software configurable	RS-232,RS-485 RS-422 DB9 female software configurable
Ethernet port	2 10/100 Mbit with integrated switch	2 10/100 Mbit with integrated switch
USB port	1 Host interface version 2.0 and 1.1	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1
Expansion slot	1 Optional Plugin	2 Optional Plugin
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Voltage	18-30VDC	18-30VDC
Current rating (at 24VDC)	0.4A	0.65A
Weight	1 Kg	1 Kg

Model	*eTOP507*	*eTOP510*
Display / Backlight	TFT Color / LED	TFT Color / LED
Colors	64K	64K
Resolution	800X480	800x600
Diagonal (inches)	7” widescreen	10.4”
Dimming	yes	yes
User memory flash	128MB	128MB
SD card slot	yes	yes
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
Serial Port	RS-232,RS-485 RS-422 DB9 female software configurable	RS-232,RS-485 RS-422 DB9 female software configurable
Ethernet port	2 10/100 Mbit with integrated switch	2 10/100 Mbit with integrated switch
USB port	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1
Expansion slot	2 Optional Plugin	2 Optional Plugin
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Voltage	18-30VDC	18-30VDC
Current rating (at 24VDC)	0.7A	1 A
Weight	1 Kg	2.1 Kg

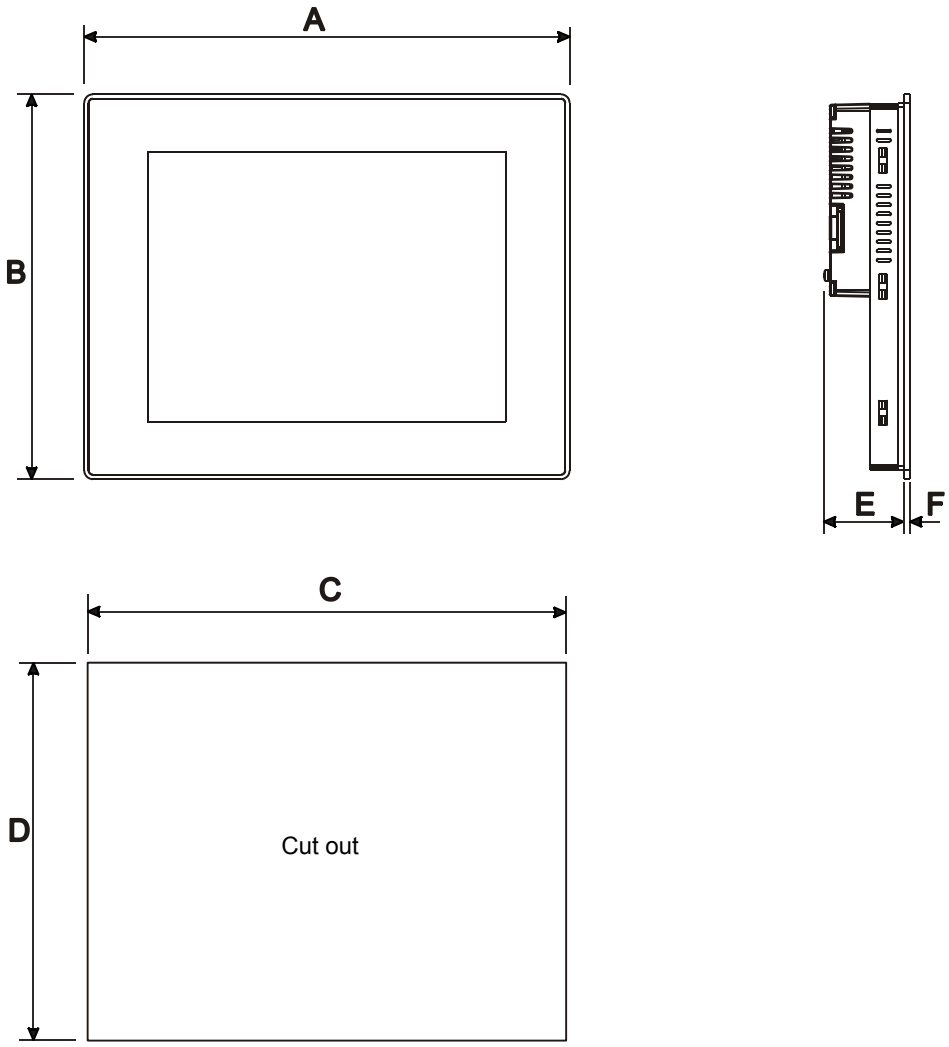
Model	*eTOP512*	*eTOP513*
Display / Backlight	TFT Color / LED	TFT Color / LED
Colors	64K	64K
Resolution	800X600	1280x800
Diagonal (inches)	12.1”	13.3” widescreen
Dimming	yes	yes
User memory flash	128MB	128MB
SD card slot	yes	yes
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
Serial Port	RS-232,RS-485 RS-422 DB9 female software configurable	RS-232,RS-485 RS-422 DB9 female software configurable
Ethernet port	2 10/100 Mbit with integrated switch	2 10/100 Mbit with integrated switch
USB port	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1
Expansion slot	2 Optional Plugin	2 Optional Plugin
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Voltage	18-30VDC	18-30VDC
Current rating (at 24VDC)	1.2A	1.2A
Weight	2.8 Kg	2.8 Kg

Model	*eTOP515*
Display / Backlight	TFT Color / LED
Colors	64K
Resolution	1024X768
Diagonal (inches)	15”
Dimming	yes
User memory flash	128MB
SD card slot	yes
Recipe memory	Yes. Flash memory storage limited only by available memory
Serial Port	RS-232,RS-485 RS-422 software configurable
Ethernet port	2 10/100 Mbit with integrated switch
USB port	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1
Expansion slot	2 Optional Plugin
Battery	rechargeable
Real Time Clock	yes
Voltage	18-30VDC
Current rating (at 24VDC)	1.40A
Weight	3.5 Kg

4.1 Dimensions



MODEL	A	B	C	D	E	F
eTOP504	149mm/5.86”	109mm/4.29”	136mm/5.35”	96mm/3.78”	56mm/2.40”	4mm/0.16”



MODEL	A	B	C	D	E	F
eTOP506	187mm/7.36”	147mm/5.79”	176mm/6.90”	136mm/5.35”	47mm/1.85”	4mm/0.16”
eTOP507	187mm/7.36”	147mm/5.79”	176mm/6.90”	136mm/5.35”	47mm/1.85”	4mm/0.16”
eTOP510	287mm/11.3”	232mm/9.13”	276mm/10.86”	221mm/8.70”	56mm/2.20”	4mm/0.16”
eTOP512	336mm/13.22”	267mm/10.51”	326mm/12.83”	256mm/10.07”	56mm/2.20”	4mm/0.16”
eTOP513	336mm/13.22”	267mm/10.51”	326mm/12.83”	256mm/10.07”	56mm/2.20”	4mm/0.16”
eTOP515	392mm/15.43”	307mm/12.08”	381mm/15”	296mm/11.65”	60mm/2.36”	4mm/0.16”

4.2 Installation Environment

The equipment is not intended for continuous exposure to direct sunlight.
This might accelerate the aging process of the front panel film.

The equipment is not intended for installation in contact with corrosive chemical compounds. Check the resistance of the front panel film to a specific compound before installation.

Do not use tools of any kind (screwdrivers, etc.) to operate the touch screen of the panel.

In order to meet the front panel protection classifications, proper installation procedure must be followed:
- the borders of the cutout must be flat
- screw up each fixing screw until the plastic bezel corner get in contact with the panel.
- the cutout for the panel must be of the dimensions indicated in this manual.

The IP66 is guaranteed only if:
- max deviation from the plane surface to the cut-out: ≤0.5mm
- thickness of the case where is mounted the equipment: from 1,5mm to 6mm
- max surface roughness where the gasket is applied: ≤120 um

Applying the gasket
The gasket should be applied on the rear of the frame.

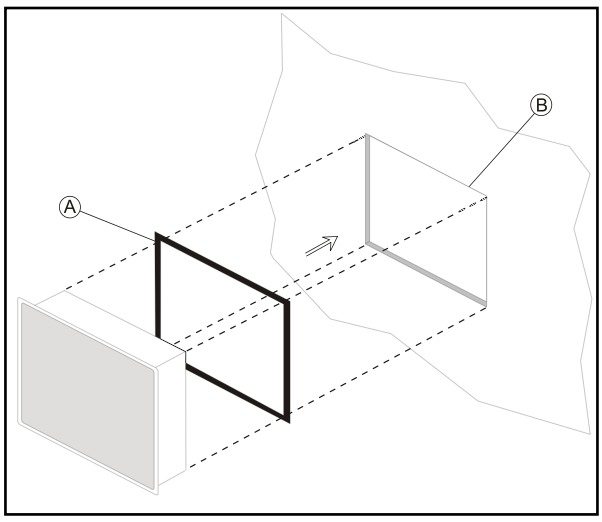


Fig. 4.1: eTOP504, eTOP506, eTOP507

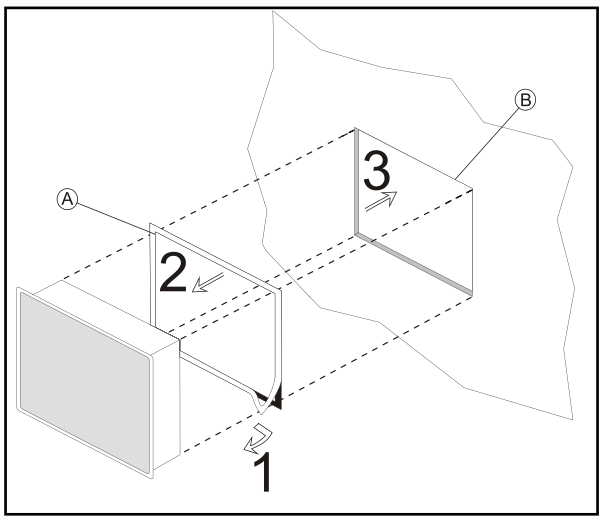


Fig. 4.2: eTOP510, eTOP512, eTOP513, eTOP515

A. Gasket
B. Installation cut-out

4.3 Installation Procedure

Place the fixing brackets as shown in figure **(Fig. 4.3)**.

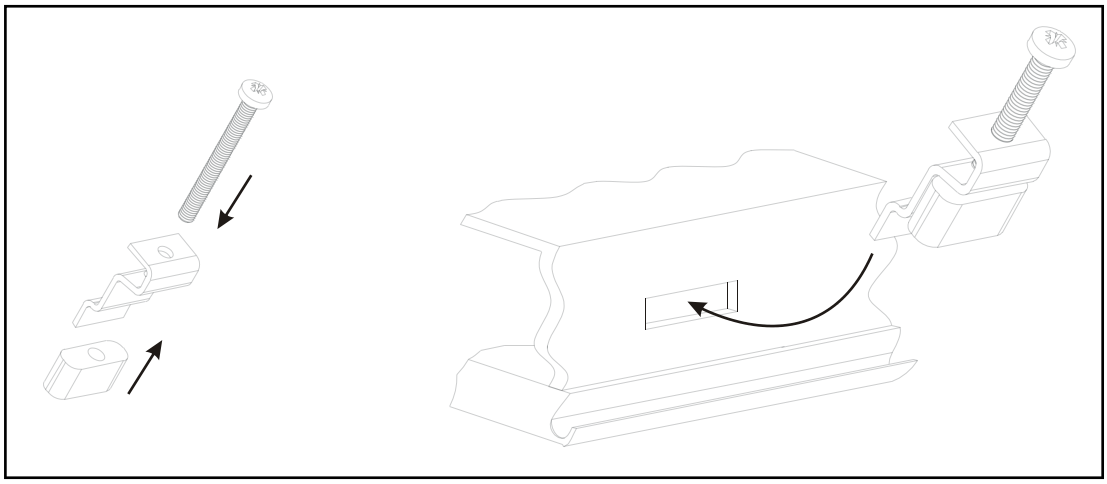


Fig. 4.3

CAUTION
Screw each fixing screw until the bezel corner gets in contact with the panel.

5 Connections

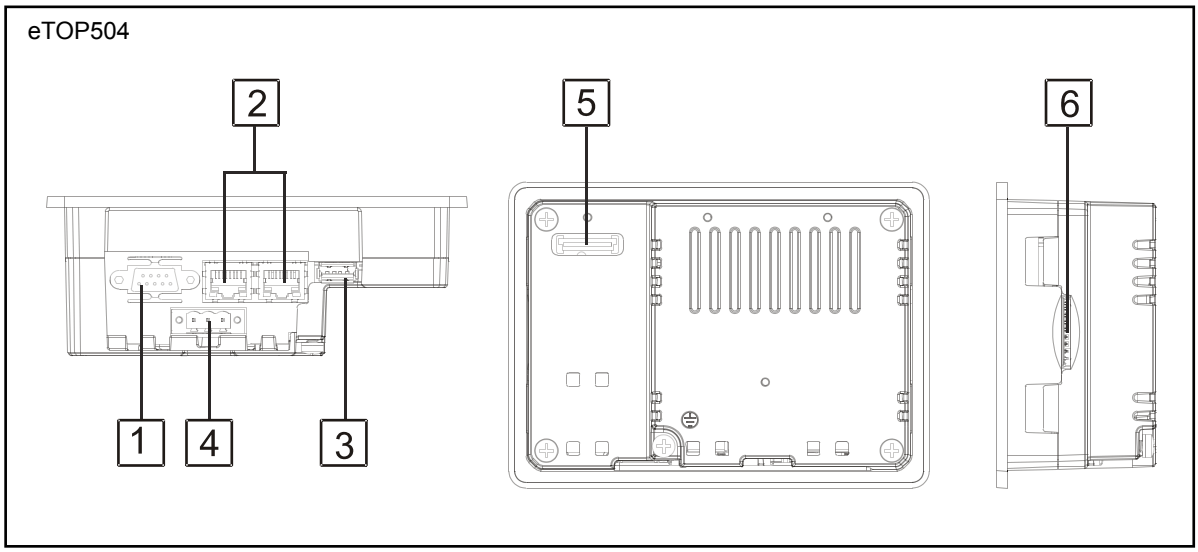


Fig. 5.1

1. Serial Port
2. 2x Ethernet Port
3. USB Port
4. Power Supply
5. Expansion slot for Plugin module
6. SD Card Slot

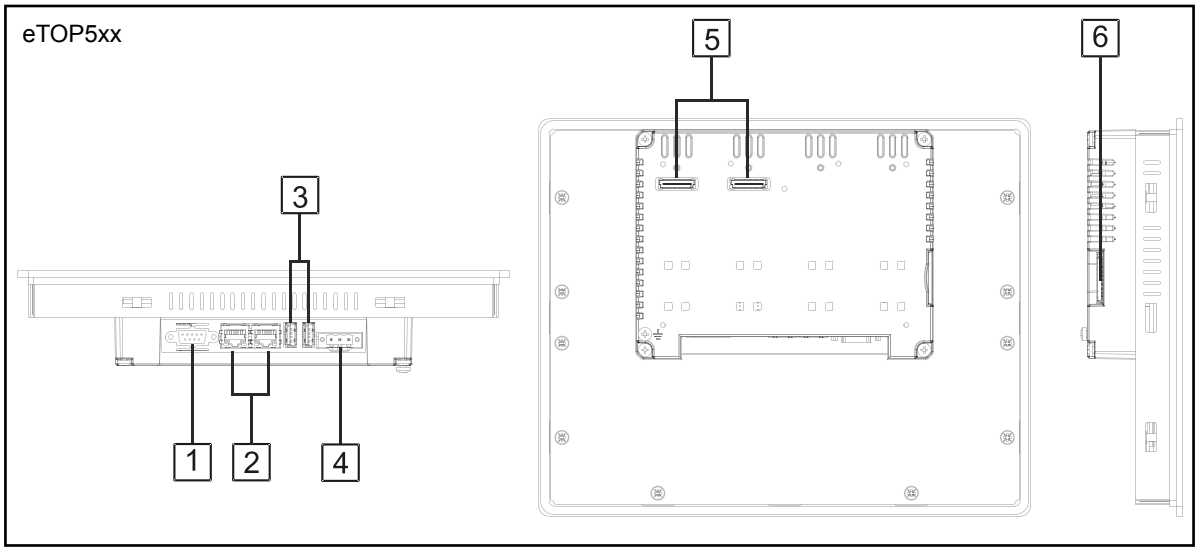


Fig. 5.2

1. Serial Port
2. 2x Ethernet Port
3. 2x USB Port
4. Power Supply
5. 2x Expansion slot for Plugin module
6. SD Card Slot

5.1 Serial Port

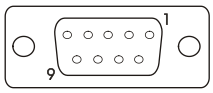
The serial port is used to communicate with the PLC or with another type of controller.
Different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, RS-485.

The serial port is software programmable. Make sure you select the appropriate interface in the programming software.

RS-232

Pin	Description
1	GND
2	
3	TX
4	RX
5	
6	+5V output
7	CTS
8	RTS
9	

SERIAL PORT



RS-422, RS-485

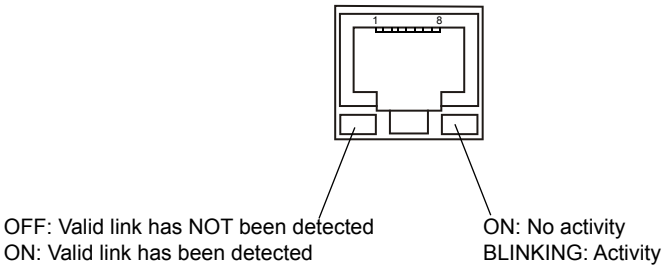
Pin	Description
1	GND
2	
3	CHA-
4	CHB-
5	
6	+5V output
7	CHB+
8	CHA+
9	

To operate in RS485 pins 4-3 and 8-7 must be connected externally.

The communication cable must be chosen for the type of device being connected.

5.2 Ethernet Port

The Ethernet port have two status indicators. Please see description in figure.



6 Power Supply, Grounding and Shielding

The power supply terminal block is shown in the figure below.

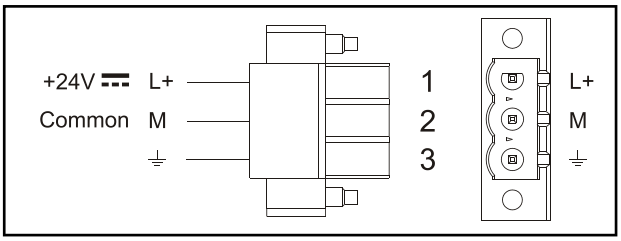


Fig. 6.1

Note: *Ensure that the power supply has enough power capacity for the operation of the equipment.*

The unit must always be grounded to earth. Grounding helps limit the effects of noise due to electro-magnetic interference on the control system.

Earth connection will have to be done using either the screw or the faston terminal located near the power supply terminal block. A label helps identify the ground connection. Also connect to ground the terminal 3 on the power supply terminal block.

The power supply circuit may be floating or grounded. In the latter case, connect to ground the power source common as shown in figure (see below) with a dashed line.
When using the floating power scheme, note that the panes internally connects the power common to ground with a 1MΩ resistor in parallel with a 4,7nF capacitor.
The power supply must have double or reinforced insulation.
The suggested wiring for the power supply is shown below.

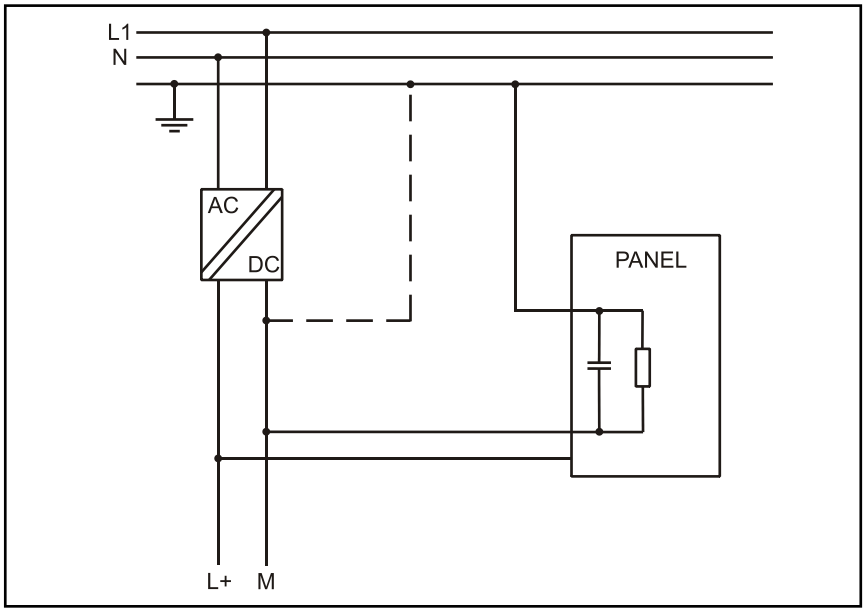


Fig. 6.2

All the electronic devices in the control system must be properly grounded. Grounding must be performed according to applicable regulations.

7 Battery

These devices are equipped with rechargeable Lithium battery, not user-replaceable.
The following information is maintained by the battery:

- hardware real-time clock (date and time)

Charge:
At first installation must be charged for 48 hours.
When the battery is fully charged, it ensures a period of 3 months of data back-up at 25°C.

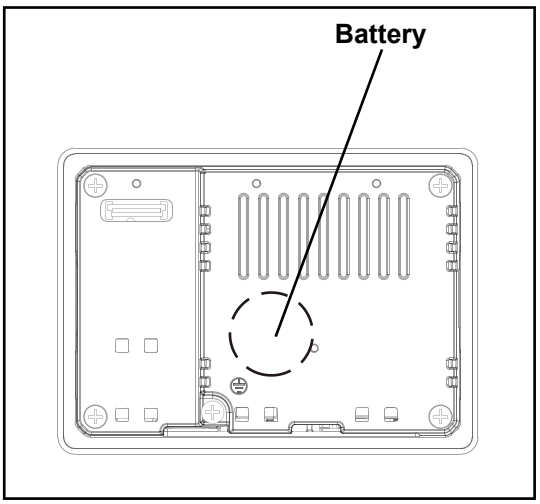


Fig. 7.1: eTOP504

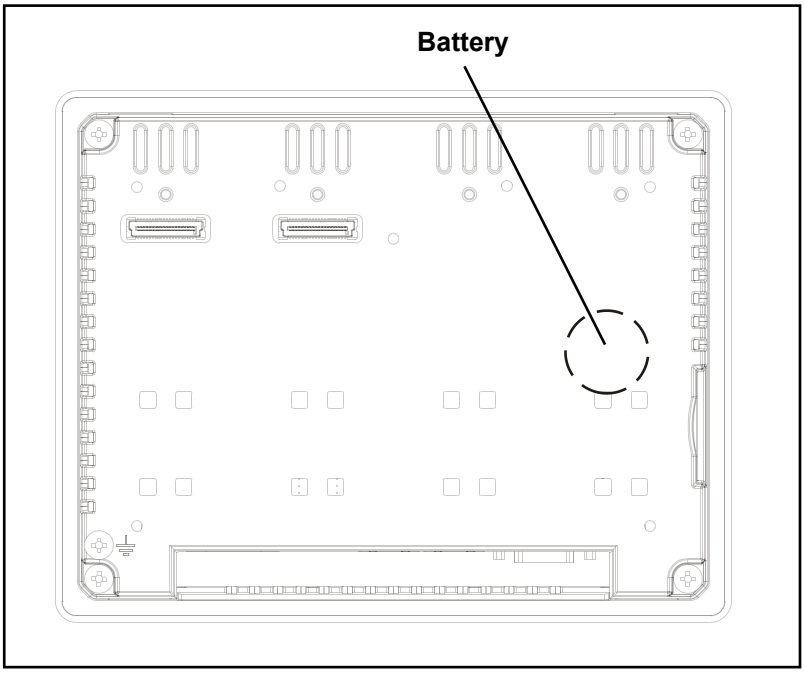


Fig. 7.2: eTOP506, eTOP507 eTOP510, eTOP512, eTOP513, eTOP515

ATTENTION
Dispose of batteries according to local regulations.

8 Cleaning Faceplates

The equipment must be cleaned only with a soft cloth and neutral soap product. Do not use solvents.

9 Getting Started

UniOP 500 series panels must be programmed with the programming software JMobile Studio.
To program a panel you will have to connect the panel to a personal computer running JMobile Studio software package; the panel must be in Configuration mode to be programmed. UniOP 500 series units are programmed via the Ethernet interface.

The software package JMobile is a Windows™ application and must be properly installed.

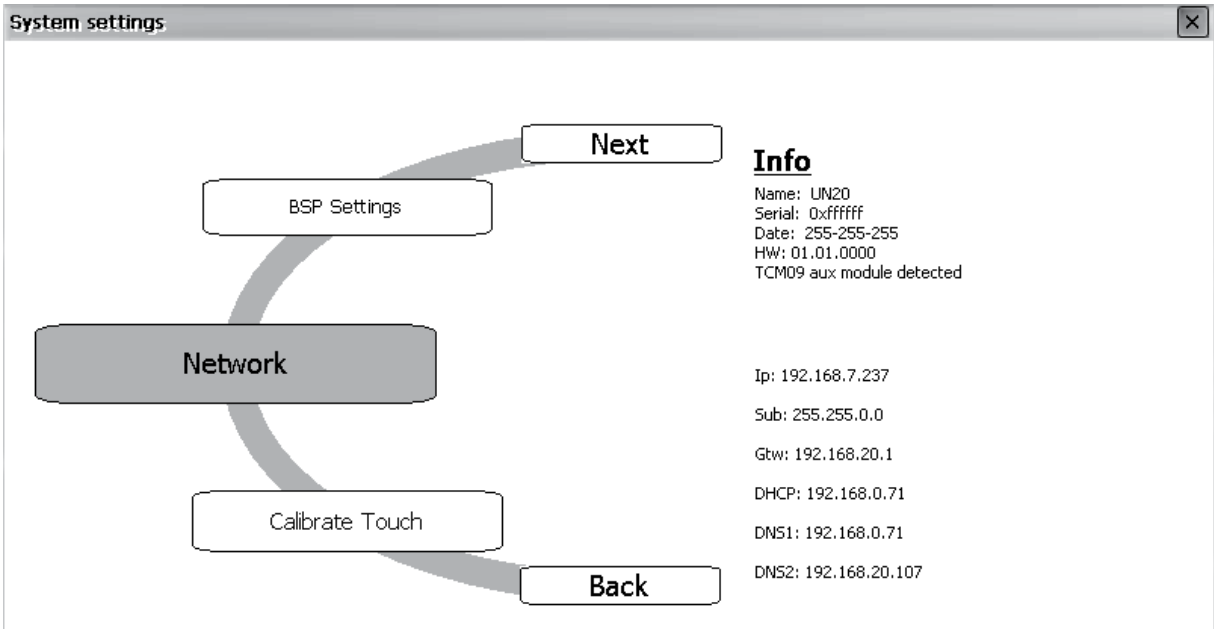
JMobile uses the personal computer Ethernet interface to communicate with the target device. Make sure that the proper firewall policy is configured in order to allow JMobile Studio to access the network.

The version of the JMobile Studio used must be compatible with the JMobile runtime version installed on the panel to be programmed.

10 System Settings

The UniOP panels have a system settings tool to allow basic and preliminary settings to the unit. The System settings tool comes in the shape of a rotating menu with navigation buttons at top and bottom to scroll between the available options. The tool is shown in the picture below.

On the left side the several components and functions are highlighted and, per each of them, the right side (“Info” pane) shows the information about the current version, when applicable. In the picture below it is showed the version of the Main OS component.



System Settings has two operating modes:
User Mode and **System Mode**.
The difference between them is only in the number of available options.

System settings in **User Mode** is activated from the context menu. The context menu can be recalled by clicking and holding any unused area of the touchscreen for a few seconds. Default holding time is 2 sec. Holding time is a runtime parameter that can be changed.

System settings in **System Mode** can be activated with the so-called Emergency system access procedure. This procedure consist in tapping in the middle of the touchscreen with a finger at a high frequency while the systemis powering up. The Emergency procedure can only be accessed at power-up.

"**User mode**" is the simplest possible interface where a generic user can get access to the basic settings of the panel:

Calibrate Touch:	allows to calibrate the touch screen interface
Network:	allows to change the options of the panel on-board network card
Time:	allows to change the panel RTC options, including time zone and DST
Display settings:	automatic backlight turnoff and brightness adjustment
BSP settings:	allows to check the **BSP** (**B**oard **S**upport **P**ackage) version (example 2.37), check the operating hours timers for the unit and separately for the backlight, enable/disable the buzzer, enable/disable the use of the "low battery" front LED indicator
Plugin list:	allows to check the presence of optional plugin modules installed.

"**System Mode**" is the complete interface of the System Settings tool where all the available options are available; in addition to the options available in the "User Mode" we have the following important options:

Format Flash:	allows to format the internal panel flash disk
Resize Image Area:	allows to resize the flash portion reserved to store the splash screen image displayed by the unit at power up; default settings are normally ok for all the units
Download Configuration OS:	allows to check current version and upgrade the back-up operating system, see below in the next chapter for additional details
Download Main OS:	allows to check current version and upgrade the main operating system, see below in the next chapter for additional details
Download Splash Image:	allows changing the splash screen image displayed by the unit at power up; the image should be provide in a specific format. We suggest to update Splash Screen Image directly from Studio software which supports this feature starting from V 1. 50
Download Bootloader:	allows to check actual version of the system boot loader and to upgrade it, see below for additional details

Only for eTOP510, eTOP512, eTOP513 and eTOP515

Download Main FPGA:	allows to check current version and upgrade the main FPGA firmware, see below for additional details
Download Safe FPGA:	allows to check current version and upgrade the back-up (safe) copy of the FPGA Firmware, see below for additional details
Download System Supervisor:	allows to check current version and upgrade the system supervisor firmware responsible for RTC and power supply handling, see below for additional details

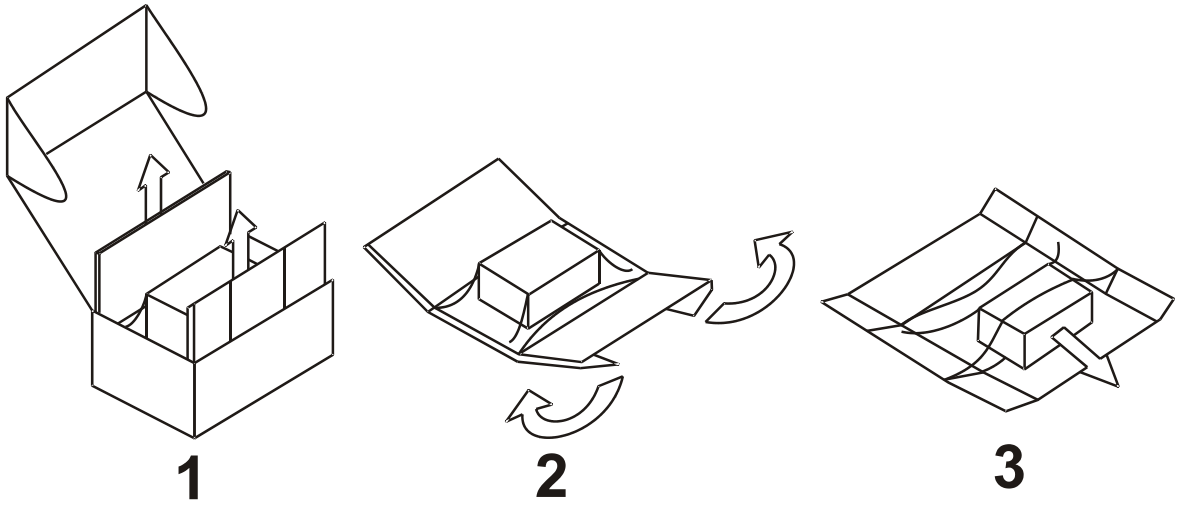
Note: *the System Settings tool includes also other options, not described and not documented at this moment*

11 LED Indicator on Front Panel

The table below shows the symbol of the LED indicator dedicated to special functions.

LED Indicator		Status	Meaning
Symbol	**Color**		
	red	ON	Hardware fault
		BLINK	Battery low / fault
	green	ON	Normal operation
		BLINK	Communication error

12 Unpacking and Packing Instructions



to repack the unit, please follow the instructions backwards.